

## Health locus of control of adolescent smokers and drinkers

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### Abstract

**Objective** - To assess whether teenagers who smoke cigarettes regularly, compared with those who have never smoked regularly, have different levels of belief concerning what controls their health. To make a similar assessment for teenagers who drink alcohol on a weekly basis compared with those who do not.

**Design** - Adolescents aged 13, 15 and 17 years were identified from age-sex registers and invited by letter for a general practice health check.

**Setting** - Three general practices in the Medical Research Council general practice research framework.

**Subjects** - 255 adolescents.

**Main outcome measures** - Measurement of "internal" health locus of control, "powerful others" health locus of control and "chance" health locus of control, using a health locus of control questionnaire.

**Results** - 255 adolescents (73%) attended and completed the questionnaire. Those who smoked regularly had significantly lower belief in their own control over their health than did those who had never smoked regularly (3.97 smokers, 4.30 never-smokers, analysis of variance adjusted for age,  $p < 0.01$ ). Weekly drinkers of alcohol had significantly lower belief than others that health professionals and family had influence over their health (drinkers 3.3, non-drinkers 3.8, analysis of variance adjusted for age,  $p = 0.003$ ). Scores for the role of professionals and family varied by age from 3.9 at 13 years to 3.5 at 17 years ( $p = 0.01$ , analysis of variance). Scores for internal control and chance did not vary by age or gender.

**Conclusion** - Adolescent smokers have significantly lower belief in their ability to control their own health, and strengthening their perception of their ability to control their own health may have potential for reducing adolescent smoking. Primary care with its focus on individual health may be an effective setting to achieve this. Adolescent drinking may be related more to attitude to authority than to health and other avenues of information may be more effective.

### Introduction

There is concern in most countries about the lack of success in reducing teenage smoking. Nearly all smokers start smoking in their teenage years, which are also important for determining other behaviours which may have a long-term impact on health. By the fifth year of secondary school (age 15 and 16 years), over a quarter of boys and girls in the UK are regular smokers, and rather more drink alcohol weekly.<sup>1</sup> The health locus of control scale<sup>2</sup> was developed to measure individuals' beliefs about how their health is controlled and was used in this study to test the hypothesis that teenagers with a stronger belief in their ability to control their own health, rather than it being determined by chance, may be less likely to smoke or drink. It may aid understanding of the factors influencing the uptake and continuation of these behaviours and appropriate health education. A recent study of adolescent smoking reported that general practice advice on smoking and smoking cessation was welcomed by teenagers,<sup>3</sup> and 60% of those who smoked regularly opted to make an agreement with the general practitioner to stop smoking.

### Methods

#### SUBJECTS

Three practices within the UK Medical Research Council's General Practice Research Framework invited patients aged 13, 15 and 17 to attend for an appointment. Practices were selected to include an inner-city practice, a rural practice and one in a small town.

#### PROCEDURES

Respondents were interviewed about their health, exercise, diet, alcohol consumption, and smoking behaviour. Regular smokers were defined as smoking at least one cigarette a week, in accordance with UK Office of Population Census and Surveys<sup>1</sup> convention for children. Salivary cotinine was measured for each subject. The overall response rate was 73% (491/677) and results of the main study have been reported elsewhere.<sup>3</sup>

#### INSTRUMENTS

The locus of control questionnaire<sup>4</sup> was given to 255 consecutive teenagers seen in all practices in the study. The questionnaire incorporates three scales each consisting of six belief

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statements, measuring the extent to which individuals perceive their health to be determined by their own behaviour "internal health locus of control" I, "powerful others" P, or "chance factors" C. For example, statements for I include "The main thing which affects my health is what I myself do" and "If I get sick it is my own behaviour which determines how soon I get well again"; statements for P include "Regarding my own health, I can only do what my doctor tells me to do" and "When I recover from an illness, it is usually because other people (eg, doctors, nurses, family, friends) have been taking good care of me"; statements for C include, "Most things that affect my health happen to me by accident" and "Luck plays a large part in determining how soon I will recover from an illness". The statements are in a Likert format ranging from one, "strongly disagree", to six, "strongly agree". A good level of reliability was reported by the authors of the scales with the internal reliability alpha coefficient ranging from 0.67 to 0.77 for each subject.

#### ANALYSIS

Scores on each scale were calculated for each teenager and mean scores estimated by age, sex, and smoking category. Differences in these mean scores by smoking status and other attributes were tested using analysis of variance.<sup>5</sup>

#### Results

Salivary cotinine measurement<sup>6</sup> showed a close relationship with the stated smoking status for never-smokers and regular smokers. Scores for the role of professionals and parents varied by age from 3.9 at 13 years to 3.5 at 17 years ( $p = 0.01$ , analysis of variance), with younger adolescents having somewhat greater belief in the influence of "powerful others" to affect their health (table 1). Scores for internal control and chance did not vary by age or sex.

Regular smokers had significantly lower values of "internal control" (4.0 smokers, 4.3 never-smokers,  $p = 0.01$ , adjusted for age) compared to never-smokers, indicating that smokers had relatively weak belief in their own control over their health when compared to never-smokers. Mean scores are given in table 2. The mean scores for "powerful others" or "chance" did not vary by smoking status.

Table 2 Mean internal health locus of control of adolescent smokers and non-smokers. Scores (standard errors)

Age	Regular smoker	Never regular smoker
13 years	4.17	4.26 (0.08)
15 years	4.17 (0.18)	4.32 (0.06)
17 years	3.87 (0.17)	4.33 (0.08)
All*	3.97 (0.12)	4.30 (0.04)
n	35	199

\* Differences by smoking status significant ( $p = 0.01$ , analysis of variance).

Most of the smokers (66%) were in the 17-year-old group and similar results were given when the analysis was restricted to this group.

Teenagers who usually drank alcohol at least once a week did not differ from non-drinkers or less frequent drinkers in their belief that their health depended on "chance" or "internal control" but their scores indicated significantly lower belief in the role of "powerful others" in controlling their health (weekly drinkers = 3.3, non-weekly drinkers = 3.8,  $p = 0.003$  adjusted for age). The same pattern was observed for 17-year-olds alone.

Scores did not vary by stated persistent health problems, body mass index, or with taking energetic exercise.

#### Discussion

These results suggest that adolescent cigarette smokers tend to believe less firmly than do non-smokers that their health is controlled by their own behaviour. Health beliefs about disease causation could be a factor in understanding why some teenagers take up and continue smoking, and quite small differences in the locus of control scores differentiated smokers and non-smokers. It is possible that the relationship between smoking and internal health locus of control, may reflect a degree of addiction in smokers even at these young ages, although teenagers in the study expressed an optimistic, if possibly mistaken, belief in their ability to stop smoking when they chose. The possibility of early addiction needs to be addressed to help with cessation. Strengthening adolescents' belief in their ability to control their own health may be an important component in preventing smoking initiation and in effective counselling of those wishing to stop. It is unlikely that the results can be explained by an underlying relationship be-

Table 1 Health locus of control scores (standard errors) of adolescents by age and sex

Locus of control		13 years	15 years	17 years	All
Internal	Boys	4.32	4.4	4.15	4.31
	Girls	4.26	4.23	4.19	4.23
	Both	4.29 (0.07)	4.30 (0.06)	4.17 (0.08)	4.36 (0.04)
Powerful others	Boys	3.95	3.89	3.54	3.84
	Girls	3.93	3.72	3.41	3.69
	Both*	3.94 (0.08)	3.79 (0.08)	3.46 (0.09)	3.75 (0.05)
Chance	Boys	3.15	3.4	3.27	3.27
	Girls	3.08	3.13	3.03	3.08
	Both	3.11 (0.09)	3.24 (0.08)	3.12 (0.10)	3.17 (0.05)
n		89	99	67	255

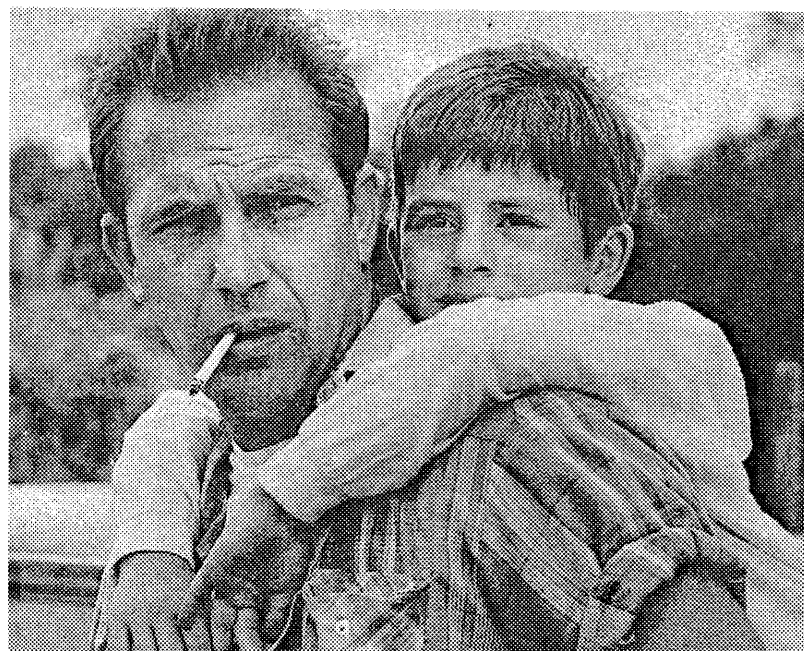
\* Differences by age significant ( $p = 0.01$ , analysis of variance).

tween locus of control and socioeconomic group because there was no significant association between socioeconomic group and smoking in this study.

Regular consumption of alcohol, on the other hand, was not related to differences in internal locus of control, but was significantly related to weaker belief in the role of health professionals and parents in controlling health. Most of the smokers and drinkers were in the 17-year-old age groups. It is legal to sell cigarettes but not alcohol to young people of this age in the UK. Under-age drinking may therefore be related more to attitude to authority than to health. That there was no significant difference in internal health locus of control may suggest that drinking alcohol is not perceived as a specific health risk. This suggests that young drinkers may be relatively resistant to advice from doctors and parents regarding alcohol consumption and that other avenues of information may be more effective. With regard to smoking, school education programmes are clearly important in giving information, but have been disappointing in reducing cigarette consumption and it may be that general practitioner advice, with its focus on individual health, can change the percep-

tion of personal control and have important potential for reducing teenage smoking and possibly other lifestyles. This study was of only limited size; it would be interesting to see the findings developed, particularly to look at a larger sample and to see how health locus of control related to the value the teenager placed on health. A randomised controlled trial would be required to see if intervention can change perception of control and, if so, if this is reflected in changing smoking status. Teenagers in this study welcomed such advice on lifestyle and a trial is necessary to test its potential effectiveness.

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Actor Kevin Costner (left), in the new movie *Perfect World*, plays an escaped convict who kidnaps a little boy.